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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,517	09/17/2003	Thomas P. Pearsall	SP02-196	4880
22928	7590	09/14/2005	EXAMINER	
CORNING INCORPORATED			STULTZ, JESSICA T	
SP-TI-3-1				
CORNING, NY 14831			ART UNIT	PAPER NUMBER
			2873	
DATE MAILED: 09/14/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,517

Applicant(s)

PEARSALL, THOMAS P.

Examiner

Jessica T. Stultz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Examiner's Comments

For applicant's information, the amendments to claims 4 and 10 overcome the previous objection to claims 4-5 and 10-11.

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Europe on September 30, 2002. It is noted, however, that applicant has not filed a certified copy of the European application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 4-8, 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Gunn.

Regarding claim 1, Gunn discloses a method of modulating an optical signal comprising the steps of: providing a waveguide defining a light path for the optical signal (Column 7, lines 42-Column 8, line 24, wherein the waveguide "100" defines a light path for an optical signal, Figures 1-5); providing a resonant cavity in the light path (Column 7, lines 42-Column 8, line 24, wherein the resonant cavity is "106", Figures 1-5); and altering the transmission characteristics of the resonant cavity by application of an electric field whereby to control the degree of transmission of light of a selected frequency propagating in the light path (Column 24, lines 49-

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60 and Column 25, lines 35-Column 26, line 63, wherein the transmission of light through the cavity is controlled by applying a voltage, i.e. an electric field, from voltage source "114", to change the resonant frequency of the cavity "106", Figures 1-5).

Regarding claim 7, Gunn discloses an optical signal modulator comprising: a waveguide defining a light path for the optical signal (Column 7, lines 42-Column 8, line 24, wherein the waveguide "100" defines a light path for an optical signal, Figures 1-5); a resonant cavity in the light path (Column 7, lines 42-Column 8, line 24, wherein the resonant cavity is "106", Figures 1-5); and a control unit for altering the transmission characteristics of the resonant cavity by application of an electric field whereby to control the degree of transmission of light of a selected frequency propagating in the light path (Column 24, lines 49-60 and Column 25, lines 35-Column 26, line 63, wherein the transmission of light through the cavity is controlled by applying a voltage, i.e. an electric field, from voltage source "114", to change the resonant frequency of the cavity "106", Figures 1-5).

Regarding claims 2 and 8, Gunn further discloses an optical signal modulator and method of modulating an optical signal as shown above, wherein the waveguide is a photonic crystal waveguide (Column 15, lines 22-38 and Column 24, lines 49-60, wherein the waveguide is a photonic crystal waveguide).

Regarding claims 4 and 10, Gunn further discloses an optical signal modulator and method of modulating an optical signal as shown above, wherein the waveguide has a silicon core layer clad with silica (Column 6, line 58-Column 7, line 18 and Column 12, lines 26-42, wherein the waveguide has a silicon core layer with silica).

Regarding claims 5 and 11, Gunn further discloses an optical signal modulator and method of modulating an optical signal as shown above, wherein an electric field applied to the resonant cavity (Column 24, lines 49-60 and Column 25, line 35-Column 26, line 63, wherein the transmission of light through the cavity is controlled by applying a voltage, i.e. an electric field, from voltage source "114", to change the resonant frequency of the cavity "106", Figures 1-5), which causes an MOS effect (Column 11, line 65-Column 12, line 25 and Column 18, lines 52-57) and alters the Q-factor of the cavity (Column 25, line 59-Column 26, line 29, wherein the quality factor changes with an applied voltage, shown in Figure 12).

Regarding claims 6 and 12, Gunn further discloses an optical signal modulator and method of modulating an optical signal as shown above, wherein a p-n junction is provided in the waveguide at the resonant cavity, and a biasing electric field is applied to the p-n junction (Column 29, lines 20-63, wherein a p-n junction is found in the waveguides shown in Figure 18 and an electric field is applied to the junction) to alter the Q-factor of the cavity (Column 25, line 59-Column 26, line 29, wherein the quality factor changes with an applied voltage, shown in Figure 12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunn al in view of Mekis et al.

Regarding claims 3 and 9, Gunn discloses an optical signal modulator and method of modulating an optical signal as shown above, but does not specifically disclose that the resonant cavity includes a plurality of holes to define a photonic bandgap device. Mekis et al teaches of a an optical signal modulator wherein the resonant cavity comprises a plurality of holes (Column 3, lines 59-61 and Column 10, lines 11-42, wherein the resonant cavity is defined by a plurality of holes, Figure 12B) defining a photonic band gap device in the waveguide (Column 9, line 37-Column 11, line 14, wherein the holes define a photonic band gap in the device, Figure 14) for the purpose of improving the radiation in a waveguide microcavity (Column 10, lines 11-42). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the modulator and modulation method of Gunn to further include the resonant cavity having a plurality of holes to define a photonic bandgap device since Mekis et al teaches of a an optical signal modulator wherein the resonant cavity comprises a plurality of holes defining a photonic band gap device in the waveguide for the purpose of improving the radiation in a waveguide microcavity.

Response to Arguments

Applicant's arguments with respect to independent claims 1 and 7 have been considered but are moot in view of the new ground(s) of rejection over Gunn as shown above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T. Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jessica Stultz
Patent Examiner

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September 12, 2005

A handwritten signature in black ink, appearing to read "Jesse", followed by a long horizontal line that ends in a small loop.A handwritten signature in black ink, appearing to read "JMS", with a large loop at the end.

JORDAN SCHWARTZ
PRIMARY EXAMINER